ALGEBRA I

The following ten California mathematics academic content standards from the Algebra I strand are assessed on the CAHSEE by 12 test questions and are represented in this booklet by 30 released test questions. These questions represent only a few of the ways in which these standards may be assessed on the CAHSEE.

ALGEBRA I	
Standard Set 2.0	**Students understand and use such operations as taking the opposite, finding the reciprocal, and taking a root, ~~and raising to a fractional power~~. They understand and use the rules of exponents.***
Standard Set 3.0	**Students solve equations and inequalities involving absolute values.**
Standard Set 4.0	**Students simplify expressions before solving linear equations and inequalities in one variable, such as $3(2x-5) + 4(x-2) = 12$.**
Standard Set 5.0	**Students solve multistep problems, including word problems, involving linear equations and linear inequalities in one variable and provide justification for each step.**
Standard Set 6.0	**Students graph a linear equation and compute the *x*- and *y*- intercepts (e.g., graph $2x + 6y = 4$). ~~They are also able to sketch the region defined by linear inequality (e.g., they sketch the region defined by $2x + 6y < 4$).~~***
Standard Set 7.0	**Students verify that a point lies on a line, given an equation of the line. Students are able to derive linear equations. ~~by using the point-slope formula.~~***
Standard Set 8.0	**Students understand the concepts of parallel lines ~~and perpendicular lines~~ and how their slopes are related. ~~Students are able to find the equation of a line perpendicular to a given line that passes through a given point.~~***
Standard Set 9.0	**Students solve a system of two linear equations in two variables algebraically and are able to interpret the answer graphically. Students are able to solve a system of two linear inequalities in two variables and to sketch the solution sets.**
Standard Set 10.0	**Students add, subtract, multiply, and divide monomials and polynomials. Students solve multistep problems, including word problems, by using these techniques.**
Standard Set 15.0	**Students apply algebraic techniques to solve rate problems, work problems, and percent mixture problems.**

* The crossed-out portion of this standard is not assessed on the CAHSEE, but is still included in grade-level standards.

135. If $x = -7$, then $-x =$

A -7

B $-\frac{1}{7}$

C $\frac{1}{7}$

D 7

M02863

136. The perimeter, P, of a square may be found by using the formula $\left(\frac{1}{4}\right)P = \sqrt{A}$, where A is the area of the square. What is the perimeter of the square with an area of 36 square inches?

A 9 inches

B 12 inches

C 24 inches

D 72 inches

M00057

137. What is the reciprocal of $\frac{ax^2}{y}$?

A $-\frac{ax^2}{y}$

B $-\frac{y}{ax^2}$

C $\frac{ax^2}{y}$

D $\frac{y}{ax^2}$

M13174

138. If x is an integer, what is the solution to $|x-3|<1$?

A $\{-3\}$

B $\{-3, -2, -1, 0, 1\}$

C $\{3\}$

D $\{-1, 0, 1, 2, 3\}$

M03035

139. Assume y is an integer and solve for y.

$$|y+2| = 9$$

A $\{-11,\ 7\}$

B $\{-7,\ 7\}$

C $\{-7,\ 11\}$

D $\{-11,\ 11\}$

M02242

140. If x is an integer, which of the following is the solution set for $3|x| = 1$?

A $\{0,\ 5\}$

B $\{-5,\ 5\}$

C $\{-5,\ 0,\ 5\}$

D $\{0,\ 45\}$

M00059

141. Which of the following is equivalent to $4(x+5)-3(x+2)=14$?

A $4x+20-3x-6=14$

B $4x+5-3x+6=14$

C $4x+5-3x+2=14$

D $4x+20-3x-2=14$

M02936

142. Which of the following is equivalent to $9-3x>4(2x-1)$?

A $13<11x$

B $13>11x$

C $10>11x$

D $6x>0$

M02531

$$\frac{20}{x}=\frac{4}{x-5}$$

143. Which of the following is equivalent to the equation shown above?

A $x(x-5)=80$

B $20(x-5)=4x$

C $20x=4(x-5)$

D $24=x+(x-5)$

M02403

144. Which of the following is equivalent to $1-2x>3(x-2)$?

A $1-2x>3x-2$

B $1-2x>3x-5$

C $1-2x>3x-6$

D $1-2x>3x-7$

M02231

145. Colleen solved the equation $2(2x + 5) = 8$ using the following steps.

Given: $2(2x + 5) = 8$

Step 1: $4x + 10 = 8$

Step 2: $4x = -2$

Step 3: $x = -\frac{1}{2}$

To get from Step 2 to Step 3, Colleen—

A divided both sides by 4.

B subtracted 4 from both sides.

C added 4 to both sides.

D multiplied both sides by 4.

M03139

146. Solve for x.

$$5(2x - 3) - 6x < 9$$

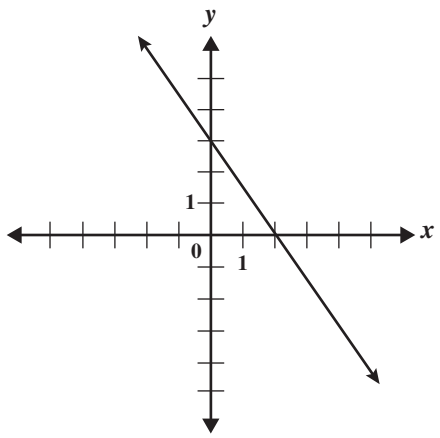
A $x < -1.5$

B $x < 1.5$

C $x < 3$

D $x < 6$

M02938



147. What is an equation of the line shown in the graph above?

A $y = -\frac{3}{2}x + 3$

B $y = -\frac{2}{3}x + 2$

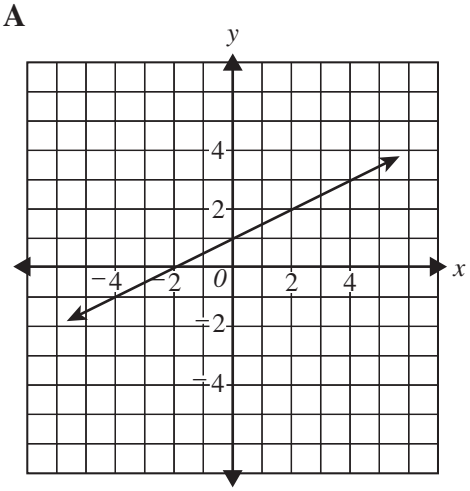
C $y = \frac{3}{2}x - 3$

D $y = \frac{2}{3}x - 2$

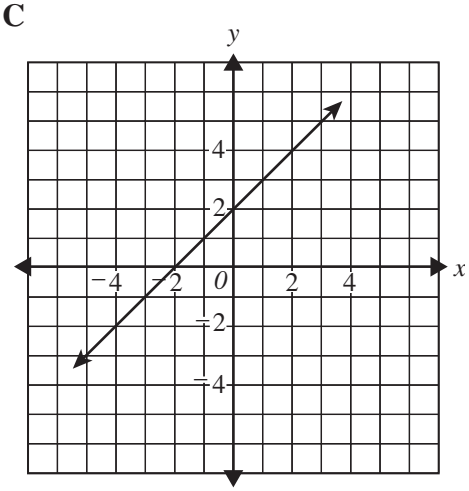
M00228

148. Which of the following is the graph of $y = \frac{1}{2}x + 2$?

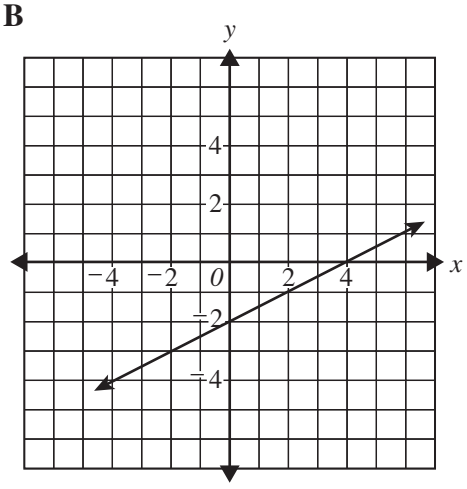
A



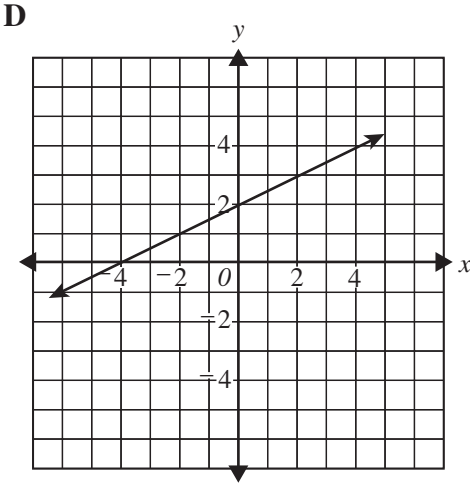
C



B



D



M02026

149. What is the *y*-intercept of the line $2x - 3y = 12$?

A $(0, -4)$

B $(0, -3)$

C $(2, 0)$

D $(6, 0)$

M02591

150. What are the coordinates of the *x*-intercept of the line $3x + 4y = 12$?

A $(0,\ 3)$

B $(3,\ 0)$

C $(0,\ 4)$

D $(4,\ 0)$

M02462

151. Which of the following points lies on the line $y = x$?

A $(-4, -4)$

B $(-4,\ 4)$

C $(4, -4)$

D $(-4,\ 0)$

M02594

152. Which of the following points lies on the line $4x + 5y = 20$?

A $(0, 4)$

B $(0, 5)$

C $(4, 5)$

D $(5, 4)$

M02565

153. What is the slope of a line parallel to the line $y = \frac{1}{3}x + 2$?

A -3

B $-\frac{1}{3}$

C $\frac{1}{3}$

D 2

M02653

154. Which of the following statements describes parallel lines?

A Same *y*-intercept but different slopes

B Same slope but different *y*-intercepts

C Opposite slopes but same *x*-intercepts

D Opposite *x*-intercepts but same *y*-intercept

M02610

155. Which of the following could be the equation of a line parallel to the line $y = 4x - 7$?

A $y = \frac{1}{4}x - 7$

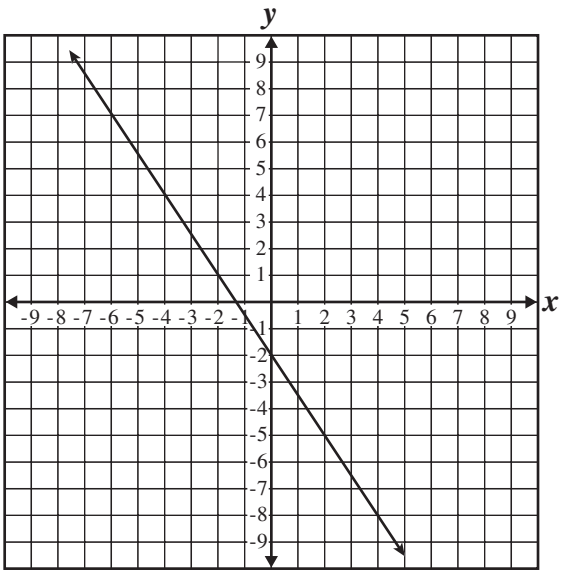
B $y = 4x + 3$

C $y = -4x + 3$

D $y = -\frac{1}{4}x - 7$

M02651

156. What is the slope of a line parallel to the line below?



A $-\frac{3}{2}$

B $-\frac{2}{3}$

C $\frac{2}{3}$

D $\frac{3}{2}$

M12410

$$\begin{cases} 7x + 3y = -8 \\ -4x - y = 6 \end{cases}$$

157. What is the solution to the system of equations shown above?

A (–2, –2)

B (–2, 2)

C (2, –2)

D (2, 2)

M02956

$$\begin{cases} y = 3x - 5 \\ y = 2x \end{cases}$$

158. What is the solution of the system of equations shown above?

A $(1, -2)$

B $(1, 2)$

C $(5, 10)$

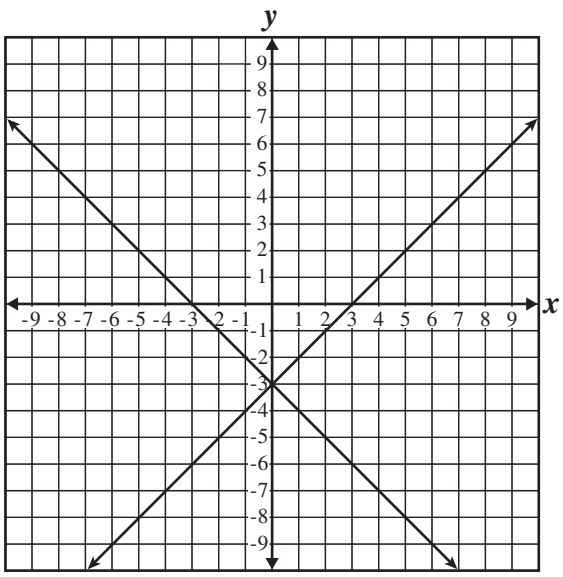
D $(-5, -10)$

M02649

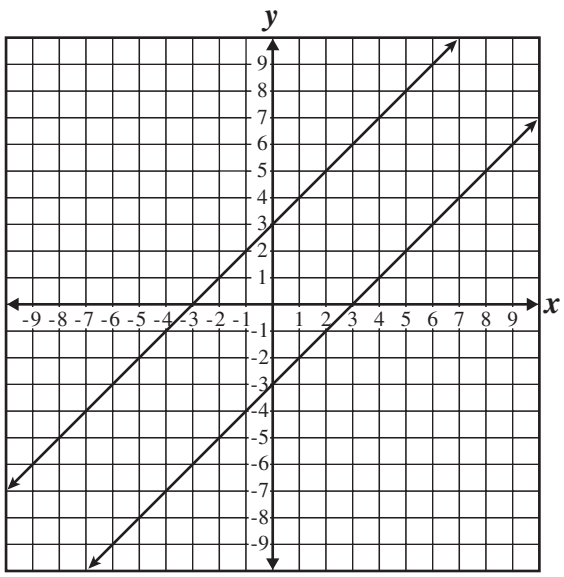
159. Which graph represents the system of equations shown below?

$$\begin{aligned} y &= -x + 3 \\ y &= x + 3 \end{aligned}$$

A



C



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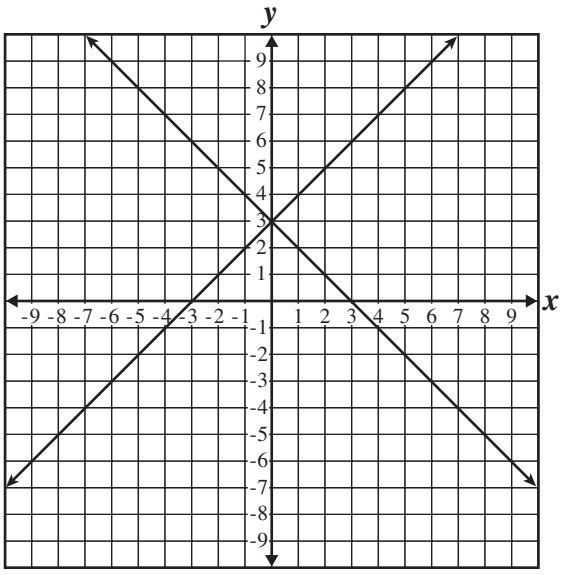

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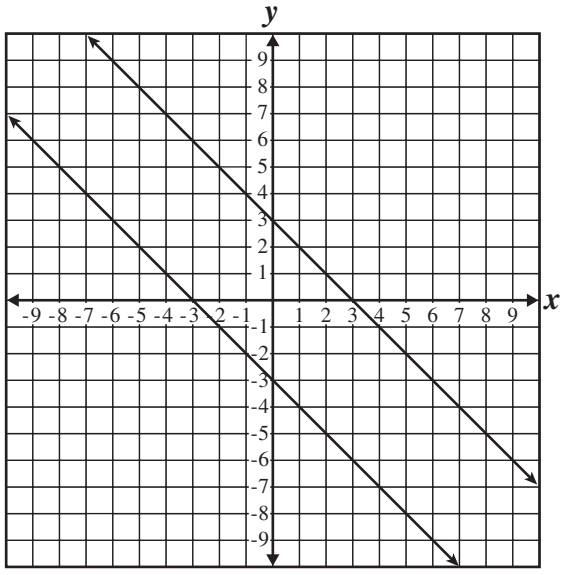


M12449

160. Simplify.

$$\left(x^2-3x+1\right)-\left(x^2+2x+7\right)$$

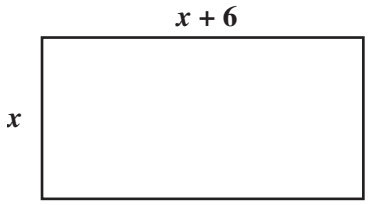
A $x-6$

B $-x+8$

C $-5x-6$

D $2x^2-x+8$

M03355



161. The length of the rectangle above is 6 units longer than the width. Which expression could be used to represent the area of the rectangle?

A x^2+6x

B x^2-36

C x^2+6x+6

D $x^2+12x+36$

M00402

162. Simplify.

$$\frac{4x^3+2x^2-8x}{2x}$$

A $2x^2+x-4$

B $4x^2+2x-8$

C $2x^2+2x^2-8x$

D $8x^4+4x^3-16x^2$

M03354

163. Mr. Jacobs can correct 150 quizzes in 50 minutes. His student aide can correct 150 quizzes in 75 minutes. Working together, how many minutes will it take them to correct 150 quizzes?

A 30

B 60

C 63

D 125

M03000

164. Ricardo runs 10 miles each Saturday. If he doubles his usual speed, he can run the 10 miles in one hour less than his usual time. What is his usual speed?

A 2 miles per hour

B 3 miles per hour

C 4 miles per hour

D 5 miles per hour

M02561

Question Number	Correct Answer	Standard	School Year of Exam
135	D	1A2.0	2001-2002
136	C	1A2.0	2001-2002
137	D	1A2.0	2004-2005
138	C	1A3.0	2001-2002
139	A	1A3.0	2000-2001
140	B	1A3.0	2000-2001
141	A	1A4.0	2001-2002
142	B	1A4.0	2001-2002
143	B	1A4.0	2000-2001
144	C	1A4.0	2000-2001
145	A	1A5.0	2002-2003
146	D	1A5.0	2001-2002
147	A	1A6.0	2002-2003
148	D	1A6.0	2001-2002
149	A	1A6.0	2000-2001
150	D	1A6.0	2000-2001
151	A	1A7.0	2002-2003
152	A	1A7.0	2001-2002
153	C	1A8.0	2001-2002
154	B	1A8.0	2000-2001
155	B	1A8.0	2000-2001
156	A	1A8.0	2004-2005
157	B	1A9.0	2001-2002
158	C	1A9.0	2000-2001
159	B	1A9.0	2003-2004
160	C	1A10.0	2002-2003
161	A	1A10.0	2000-2001
162	A	1A10.0	2003-2004
163	A	1A15.0	2001-2002
164	D	1A15.0	2004-2005